

What is claimed is:

1. An image forming apparatus that receives image data and forms an image based on the image data, the image forming apparatus comprising:
 - a dividing unit that divides the input image data into data groups based on a prescribed number of pixels in main scanning direction;
 - a tone setting unit that sets tone for each data group created by the dividing unit based on the number of pixels having a prescribed value in the data group;
 - a position attribute setting unit that sets the position attribute for each data group created by the dividing unit based on arrangement of pixels having a prescribed value in the data group; and
 - a pulse width modulation unit that performs pulse width modulation in response to a driving clock signal corresponding to a resolution of the input image data divided by the number of pixels in a data group created by the dividing unit, wherein the pulse width modulation unit performs exposure of each pixel for output image based on the pulse width in accordance with the tone set by the tone setting unit and the intra-group position in accordance with the position attribute set by the position attribute setting unit.
2. The image forming apparatus as claimed in claim 1, wherein the image data received by the dividing unit is binary image data.
3. The image forming apparatus as claimed in claim 1, wherein the tone setting unit sets the tone based on the ratio of the number of ON pixels to the total number of pixels in the data group.

4. The image forming apparatus as claimed in claim 3,
wherein the position attribute setting unit sets the position attribute based on the arrangement of the ON pixels in the data group.
5. The image forming apparatus as claimed in claim 1,
the position attribute set by the position attribute setting unit includes right end position and left end position.
6. The image forming apparatus as claimed in claim 5,
wherein the prescribed number of pixels based on which dividing is performed by the dividing unit is three or more, and
the position attribute set by the position attribute setting unit further includes both end position and center position.
7. The image forming apparatus as claimed in claim 1, further comprising
a speed conversion memory that stores set values set by the tone setting unit and the position attribute setting unit, and outputs the stored image data in response to the driving clock signals for the pulse width modulation unit.
8. An image forming method for receiving image data and forming an image based on the image data, the image forming method comprising the steps of:
dividing the input image data into data groups based on a prescribed number of pixels in main scanning direction;
setting the tone for each data group based on the number of pixels having a prescribed value in the data group;
setting position attribute for each data group based on arrangement of pixels

having a prescribed value in the data group;

performing pulse width modulation in response to a driving clock signal corresponding to a resolution of the input image data divided by the number of pixels in one data group; and

performing exposure of each pixel of the output image based on the pulse width in accordance with the tone set by the tone setting unit and the intra-group position in accordance with the position attribute set by the position attribute setting unit.

9. An image forming apparatus, comprising:

a dividing unit that divides input image data into data groups based on a prescribed number of pixels;

a setting unit that sets tone data and position attribute for each data group created by the dividing unit based on number of pixels having a prescribed pixel value in the data group; and

a pulse width modulation unit that performs pulse width modulation for each pixel in the output image, in response to driving clock signals corresponding to the input image data resolution divided by the number of pixels in a data group created by the dividing unit, based on pulse width and intra-group pixel position according to the tone and position attribute set by the setting unit.

10. The image forming apparatus as claimed in claim 9, wherein

the setting unit that sets tone data and position attribute with reference to a conversion table including input data, attribute data and tone data.

11. The image forming apparatus as claimed in claim 9, further comprising

a speed conversion memory into which data from the setting unit is written in sync with input clock signal and from which the data is read out data to the pulse width modulation unit in sync with output clock signal.